

Engineering Design and Development

Course Code: 21007

Rationale Statement:

Engineering Design and Development is a second level course in engineering technology. Students are engaged in an instructional program that integrates academics and technical preparation and focuses on career awareness. The course outline for Engineering Design and Development could be used as an outline for a senior experience. This course is designed to provide the student with an engaging opportunity to design, innovate and develop technological artifacts (products). This course will prepare students for direct entry into a career, advanced educational opportunities, and lifelong learning.

Suggested Grade Level: 11-12

Topics covered:

- Problem Solving
- Conducting Research
- Analyzing Criteria
- Analyzing Research
- Decision Making
- Creating a Product
- Product Testing
- Communication
- Writing

Indicator #1: Identify a technologically related problem and possible solutions	
Bloom's Taxonomy Level	Standard and Examples
Analyzing	EDD.1.1 Examine current state of a problem Examples: <ul style="list-style-type: none"> • Perform a needs assessment to determine relative importance of the problem • List pros and cons of a current problem • Compare current problem to similar problems
Applying	EDD.1.2 Research solution options to solve the problem Examples: <ul style="list-style-type: none"> • Brainstorm possible solutions • Explore other options via the Internet, library, interviews, etc. • Conduct research by interviewing industry professionals
Applying	EDD.1.3 Propose new solutions to solve the problem Examples: <ul style="list-style-type: none"> • Present a design plan • Formulate a course of action to solve the chosen problem • Discuss solution ideas with team members
Knowledge	EDD.1.4 Identify the best solution Examples: <ul style="list-style-type: none"> • List the pros and cons of each solution • Discuss and analyze potential solutions • Select the best solution

Indicator #2: Construct a prototype of the solution to the problem	
Bloom's Taxonomy Level	Standard and Examples
Applying	EDD.2.1 Construct a prototype to model solution Examples: <ul style="list-style-type: none"> • Sketch a prototype of their product • Communicate product specifications • Construct product according to specifications
Applying	EDD.2.2 Test the prototype for effectiveness Examples: <ul style="list-style-type: none"> • Create a product for safety testing • Collect data on prototype tests • Analyze the data for prototype effectiveness

Indicator #3: Analyze test data results for prototype performance	
Bloom's Taxonomy Level	Standards and Examples
Applying	EDD.3.1 Analyze test results Examples: <ul style="list-style-type: none"> • Evaluate product performance data • Chart and graph data • Write a reflection on the test results
Applying	EDD.3.2 Make decisions based on test result data Examples: <ul style="list-style-type: none"> • Identify performance needs • Theorize on product improvements • Develop concept models based on data results
Applying	EDD.3.3 Redesign the product to meet performance needs Examples: <ul style="list-style-type: none"> • Sketch changes made to prototype • Summarize findings of prototype performance • Apply changes to the prototype

Indicator #4 Communicate solution(s) and the prototype for others	
Bloom's Taxonomy Level	Standards and Examples
Applying	EDD.4.1 Communicate solutions for the product Examples: <ul style="list-style-type: none">• Create a presentation of the final product for potential clients• Write a report for potential clients• Modify final product options to meet client demand

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